METRO DADE

METAL BUILDING QUESTIONS:

ME1: (Q59:) Do exterior storage sheds have to be tested to the same PA201, PA202, and PA203 as habitable structures?

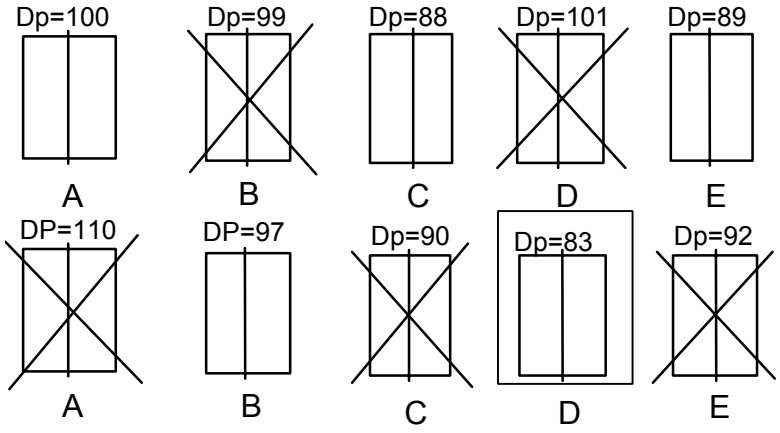
A: Yes, all do apply.

ME2: (Q 115:) What is the procedure Dade County will follow for the approval of metal buildings?

A: ***The following addresses how metal building panels (such as those used in storage sheds, hangers, etc.) shall be treated to comply with the new Dade County requirements.***

First, metal-building companies shall test each of their panel configurations, and in order to be consistent, the following procedures are what this office has previously conveyed to the metal building industry with some minor clarification. Two samples of each panel configuration must be verified to the requirements of Protocol PA202, (Static air test). By testing two samples of each of the panel configurations for PA202 in the largest girt spacing, design pressure values may be obtained that will give grounds for determining the weakest panel. The results of the two samples of each configuration tested shall not vary more than 20%. The highest design pressure result of each of the two tests shall be dropped, and the lower design pressure value shall be used. The values of these panels are then compared with results of other panel configurations, and the determination of "*the weakest*" is made. Maximum allowable deflection is L/180 with a recovery at test load of 80%.

For example, if you have five panel configurations, (A,B,C,D, & E), you shall test each of the ten following two panels wide samples to the static air tests described in PA202.

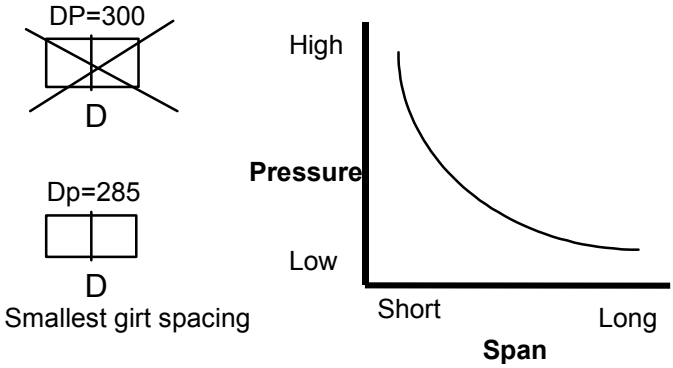


Same largest girt span for each of the five panel types; two samples of each tested to PA202. Samples must not be supported on the sides.

In this example panel D with a design pressure of 83 psf was determined the weakest after dropping the highest values and comparing the remaining values.

Once you have determined the weakest panel configuration, based on the maximum fixed span tested above, an additional two samples of that same panel type shall be tested at the shortest girt span to the requirements of PA202. The results of these two tests shall be within 20% and the higher result discarded.

The above mentioned procedure will allow you to interpolate design pressure values for spans between the those tested, and limited by the pressures attributed to each tested unit.
From the example above the following applies:



Secondly, the weakest determined panel from the testing above shall be subjected to the requirements of PA201 and PA203. Here, the largest girt span shall be tested, and shall comply with the three-specimen requirement. Testing these three samples will qualify shorter girt spacing for these impact requirements when staying between the boundaries set in the test results of PA202. The failure mode of the panels shall be cracks, or gaps greater than those allowed in the South Florida Building Code for products that are to meet building envelope requirements. (This being the 1/16" x 5" gap through which air can pass.) Refer to question 51 for impact locations. The samples for this portion of the testing shall consist of three (3) panels wide, and shall not be supported on the sides.

From all of the above testing, all the panels will receive the lowest resulting pressure value from PA202 or of that panel determined "*the weakest*". If the manufacturer decides to rate each panel for its corresponding rating, the requirements are clear that three samples of that particular panel shall be additionally subjected to PA201 and PA203 and the shorter girt sample tested as well, and each one must obtain a separate Product Approval.

Up to three (3) different fasteners may be qualified in this series of tests; one (1) in each of the three (3) samples tested for PA201 and PA203. If an additional fastener is to be qualified, an additional sample shall be tested to PA201 and PA203.

Thirdly, if planning to use the panels for roofing applications, the panels shall be treated separately. A different Product Approval Application must be filed for the roofing condition, where some of the above tests may serve some of these requirements.

The testing requirements for the roof are as required in PA125 that can be obtained from the Building Code Compliance Office. A checklist for the roofing application of these panels is also available. Regardless if the panels are the same as the walls, the product approval must be kept separate since the requirements are different.

ME3: (Q 116:) What is the procedure Dade County will follow for the approval of metal frame structures that compliment other types of sheathing?

A: A large number of questions have been directed to our department from the steel construction industry, regarding the fabrication of steel frame structures. These

structures are not prefabricated, and they will be sheathed with sheathing material specifically prescribed in the South Florida Building Code. We are therefore proposing the following to be carried out.

The procedure will be divided into two sections as follows:
The metal frame construction shall conform to all of the following:
-Shall have a special inspector at the site
-Shall have 5/8", 5 ply plywood sheathing minimum
-Shall have paper backed wire lath and stucco over the plywood
-Shall submit calculations to the building department from a Florida Registered structural engineer that includes all of the following:

* analysis of all structural members and their connections subject to live load, dead load, and wind load
* calculation of wind loads per ASCE 7-88
* overturning moments
* stress diagrams
* analysis of roof framing and necessary bracing
* analysis of member framing at wall openings under concentrated roof loads
* provisions for eccentric connections
* minimum connections per AISC 9th Edition J6 shall be 6000 lb. or per AISI cold-formed specifications unless approved by Product Control as an alternate method of construction
* stresses produced by dead and live loads shall not exceed the allowable stress; no increase will be allowed except where combined with wind load.
* fabricated wall studs shall have continuous web members

* *To be reviewed by the Building Department's certified structural plans examiner*.

- Structural steel members shall have a G90 galvanization coating in accordance with ASTM A525 when less than 20 Ga..

- Cables and rods shall not be used for lateral bracing

- All structural metal shall be structural quality steel in accordance with ASTM A446

- All exterior doors, windows, shutters, plastic plumbing fixtures, glass blocks, roofing materials, etc. shall require to have Dade County Product Approval.

In addition to the above, this office strongly suggests:

- No further spacing of studs and trusses of more than 16" o.c.

- A truss load test following the procedures set by T.P.I.

- For positive and negative loads, a compression, transverse, and racking load per ASTM E72 should be performed on a wall section.

- All of the testing results of this section must be carefully evaluated.

All other sections of the South Florida Building Code such as, but not limited to fire rating, and building distance separation shall apply.

Please note that this does not apply to metal sheathed buildings, screen enclosures, sheds and the like. Said structures require Product Approval prior to evaluating for permits as described in question 115.

The above requirements will provide the metal frame building industry the use of their alternate method of construction, as described in the South Florida Building Code.

ME4: (Q125:)Is the tensile test required for metal roofs/walls (Structural & Non-Structural)?

A: Effective January 1, 1996, all metal panels used on roofs and/or walls shall be tested in accordance with ASTM E-8 and a test report shall be submitted with the application.

ME5: (Q129:) What types of approval are obtainable for metal walls and metal roofs for approval in Dade County?

A: The procedure below describes two types of **roof or wall panel** approvals. Different panel shapes or profiles will require separate application.

1) **Approval** for one profile and one gage based on only one span and one pressure in the field or interior zone, in the same manner as it was tested, and one maximum calculated pressure with reduced span in the corner and perimeter or end zone. Thicker gages of same profile can be included in the approval but they will be limited by the results of the thinner gage. **Minimum testing:** Three (3) specimens of the thinner gage, if several gages are to be included, for the maximum span to be used in the field or interior zone. The test result shall be within a 20% maximum difference to be accepted. **Calculations** for one maximum projected pressure to be used on either corners and perimeter or end zone based on E, I and S adjusted by the test and limited by bending, deflection and reaction at fastener location. **Limitations;** pressure and span on the field, corner and perimeter or interior and end zones can be reduced but size, profile, form, etc. of the panel cannot change.

2) **Approval** for one profile, one gage, several spans and pressures on the field, corners and perimeters or interior and end zones. Thicker gages of the same profile can be included in the approval but they will be limited by the results of the thinner gage. **Minimum testing**: Three (3) specimens of the thinner gage for maximum span to be used on all cases. The test result shall be within a 20 % maximum difference to be accepted. **Calculations** for pressures and spans based on E, I and S adjusted by the test and limited by bending, deflection and reaction at fastener location; producing one table or curve of load vs. span. **Verification;** the maximum pressure shown on the curve or table has to be verified by a test of one specimen. If several curves are produced maximum pressure on each curve must be verified by a different test.

Notes: 1) The testing procedure specified here applies to Uniform Air Static pressure only.
2) Only tests that can verify the formula $D= KwL^4 / EI$ can be used with this procedure.
3) Three (3) test specimens are within the standards of the industry.